

**SHEET METAL  
MECHANIC  
WG-3806-10**

**METAL TRADES**

**I. POSITION AND ORGANIZATION INFORMATION****Position:**

Sheet Metal Mechanic, WG-3806-10

**Purpose of position:**

The primary purpose of this job is to plan, lay out, fabricate, modify, repair, assemble, and install sheet metal parts, items, and assemblies.

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**Organization:**

Facilities Mgmt Div., Maintenance Branch

**Organization goals:****II. MAJOR DUTIES****A. Duty (Critical):**

Plans and lays out work from blueprints, sketches, drawings, specifications, and work orders in the construction and maintenance of installation facilities. Reviews work order requirements reflecting sheet metal articles, parts, and assemblies to be constructed, altered, or repaired. Visits worksite and analyzes, evaluates, and classifies structural sheet metal damage when planning repair and modification projects. Makes changes to job layout based on on-site inspection of job. Uses complicated shop mathematics to calculate irregular curves, angles, and pitch. Determines material, tools, and equipment needed for the project and how or what repairs need to be made. Uses complicated measuring instruments such as protractors; calipers; snap ring, height, depth, dial, and screw pitch gauges; and other hand-measuring devices to measure plans and projects. (25%)

**Tasks:**

1. Interprets blueprints, sketches, work orders, and specifications and determines project requirements.
2. Evaluates structural damage to sheet metal and accurately determines appropriate corrective measures and efficiently plans sequence of work.
3. Determines the proper tools and material required for the job or projects.

**Selected Staffing KSAs:**

A1, A2, A3, A4, A5, A6, A7, A8, A9, A10, A11

**B. Duty (Critical):**

Develops patterns, cuts, forms, joins, assembles, and installs items and systems which have combined straight and curved edges or irregular curves, angles, and planes. Applies principles of radial-line development combined with parallel-line development to devise and calculate patterns. Manufacturers items and systems with dovetailed seams, set-in-bottom seams, burred-bottom seams, or wire or lock seams. Sets up, adjusts, and operates powered and non-powered tools and forming equipment to form sheet metal into

cylindrical, tapered, conical, and irregular shapes. Selects, cuts, bends, and installs hardware on all types of assemblies as determined by pattern, layout, and specification. Fabricates templates for sheet metal components. Assembles and fabricates components of stainless steel, black iron, galvanized iron, terne plate, copper sheet, magnesium, honeycomb material, and alloys and installs by use of bolts, screws, and lock-seams. Applies riveting, soldering, and spot-welding techniques for appearance, durability, and structural soundness. Works with a variety of assembly joints, hems, and edges. (25%)

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**Tasks:**

1. Produces finished products according to specifications, within established time frames, and meets customer requirements.
2. Work meets all required standards for accuracy, proper spacing, fit, and structural soundness.

**Selected Staffing KSAs:**

A1, A2, A3, A4, A5, A6, A7, A8, A9, A10, A11

**C. Duty (Critical):**

Performs sheet metal mechanic duties in a safe manner, utilizing safety practices and procedures, and complying with established safety rules and regulations. Follows federal and state rules when storing, using, handling, labeling, and disposing of hazardous materials and waste in accordance with environmental standards. Performs clean-up duties such as cleaning equipment, sweeping, straightening, and lining up tools, and other property in the assigned area. Uses and assures proper fit of required safety equipment and clothing. (25%)

**Tasks:**

1. Operates equipment in a safe manner, applying established safety rules and regulations to minimize minor violations and to avoid major violations due to employee error or negligence.
2. Adheres to safety and security procedures and regulations and promptly reports any observed or identified violations in accordance with established guidelines.
3. Complies with environmental laws and regulations when working with chemicals and disposing of toxic and hazardous waste.

**Selected Staffing KSAs:**

A1, A2, A3, A4, A5, A6, A7, A8, A9, A10, A11

**D. Duty (Critical):**

Operates and maintains complex hand and power tools and equipment such as sliproll forming machines, box and pan brakes, rotary machines with extra forming rolls, and crimping, burring, turning, and beading machines, and soldering and welding equipment to fabricate and repair items. Uses and maintains a variety of other tools such as drill presses, rivet guns, punches, metal saws templates, unit shears, power hand saw, power band saw, universal

grinder, electric sander, and other tools of the trade. Maintains records and documents action. (25%)

**Tasks:**

1. Uses, maintains, and accounts for all types of tools required to accomplish assigned duties.
2. Prepares records of actions taken and assures documentation is properly signed and coordinated in a timely manner.

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**Selected Staffing KSAs:**

A1, A2, A3, A4, A5, A6, A7, A8, A9, A10, A11

**III. KNOWLEDGES, SKILLS AND ABILITIES (KSAs)****A. Selected Staffing KSAs:**

1. Knowledge of sheet metal shop mathematics and skill in formulating plans, patterns, and templates involving straight and curved edges or irregular curves, angles, and planes.
2. Knowledge of regulations, procedures, and policies related to records maintenance and documentation.
3. Knowledge of and ability to apply safety and environmental standards, regulations, and requirements.
4. Skill in layout and pattern development (including geometric projection and triangulation).
5. Skill in fabricating complex items from a variety of materials such as galvanized or stainless steel, black iron, aluminum, copper sheet, magnesium, honeycomb material, and alloys.
6. Skill in using and maintaining a variety of metal shop tools, equipment, and measuring instruments.
7. Skill in assembling, fabricating, and repairing sheet metal systems, components, and items.
8. Ability to inspect and evaluate structural damage to sheet metal systems sufficient to plan and accomplish repairs.
9. Ability to read and interpret blueprints, diagrams, sketches, and technical specifications.
10. Ability to adapt to new technologies affecting sheet metal mechanic work.
11. Ability to communicate, both orally and in writing.

**B. Basic Training Competencies:**

1. Knowledge of sheet metal shop mathematics and skill in formulating plans, patterns, and templates involving straight and curved edges or irregular curves, angles, and planes.
2. Knowledge of regulations, procedures, and policies related to records maintenance and documentation.
3. Knowledge of and ability to apply safety and environmental standards, regulations, and requirements.

4. Skill in layout and pattern development (including geometric projection and triangulation).
5. Skill in fabricating complex items from a variety of materials such as galvanized or stainless steel, black iron, aluminum, copper sheet, magnesium, honeycomb material, and alloys.
6. Skill in using and maintaining a variety of metal shop tools, equipment, and measuring instruments.
7. Skill in assembling, fabricating, and repairing sheet metal systems, components, and items.
8. Ability to inspect and evaluate structural damage to sheet metal systems sufficient to plan and accomplish repairs.
9. Ability to read and interpret blueprints, diagrams, sketches, and technical specifications.
10. Ability to adapt to new technologies affecting sheet metal mechanic work.
11. Ability to communicate, both orally and in writing.

#### IV. CLASSIFICATION FACTORS

##### Factor 1. Knowledge

1. -- Knowledge of the characteristics and properties of any metals used in the trade, e.g., stainless steel, copper sheet, magnesium, honeycomb material, and alloys.
- Knowledge of all methods used to assemble metal systems, including complex assembly joints, hems, and edges.
- Ability to recognize various size bolts, screws, and rivets.
- Skill in reading and interpreting blueprints, diagrams, sketches, and technical specifications.
- Knowledge of complicated shop mathematics to calculate irregular angles, pitch, and curves. Skill in evaluating structural damage to sheet metal systems or items in order to plan and lay out repair and modification projects.
- Skill in the use of a wide variety of complicated hand and power tools such as crimping, burring, turning, and beading machines, and soldering and welding equipment. Skill in the use of precision measuring instruments such as protractors, calipers, snap ring, height, depth, dial, and screw pitch gauges, and other hand-measuring devices to measure plans and projects.
- Knowledge of the principles of parallel and radial line development.
- Knowledge of pattern and template making and testing techniques.

##### Factor 2. Responsibility

- Work is done from written or oral instructions, blueprints, and sketches.
- Employee personally inspects items or systems to be manufactured or repaired.

Plans own work and devises plans for others to follow. Makes templates, and selects, uses, or prescribes methods, materials, and machines most appropriate for assigned projects. Riveting, soldering, and spot-welding is done for appearance as well as strength. Completed work is spot-checked by supervisor for compliance with requirements and adherence to quality standards. Projects are also subject to various kinds of inspections and tests.

**Factor 3. Physical Effort**

Work encompasses strenuous physical exertion when bending and shaping the more complex items in handling larger and bulkier material. Requires physical effort which includes prolonged standing on production lines; climbing up and down ladders and scaffolds; working in cramped and awkward positions while installing items; and reaching, lifting, and bending while using hand and powered tools in uncomfortable positions for extended periods. Weight lifted seldom exceeds 50 pounds.

**Factor 4. Working Conditions**

Works both inside and outside and is subject to a moderate amount of noise and vibration from shop machines. When working outside is subject to a variety of weather conditions. Subject to cuts, bruises, falls, and burns. Shop areas normally have adequate lighting and ventilation. Required to wear safety glasses when performing eye hazardous operations.

## V. CLASSIFICATION SUMMARY

## In this position:

Duty A. 25% WG-3806-10 Sheet Metal Mechanic  
Plans and Lays out Work

Duty B. 25% WG-3806-10 Sheet Metal Mechanic  
Develops Patterns

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Duty C. 25% WG-3806-10 Sheet Metal Mechanic  
Performs Mechanic Duties

Duty D. 25% WG-3806-10 Sheet Metal Mechanic  
Operates Tools

OPM Job Grading Standard for Sheet Metal Mechanic, WG-3806, (TS-8) dated  
September 1969.

Grade: WG-10